

AMENDMENTS TO THE DRAWINGS:

The attached sheet of drawings includes changes to Fig. 1. This sheet, which includes Figs. 1-3, replaces the original sheet including Figs. 1-3. In Fig. 1, the legend "Prior Art" has been added.

Attachment: 1 replacement sheet

REMARKS

I. Introduction

Claims 10 and 12-18 are pending in the present application after cancellation of claim 11. claims 10 and 14 have been amended.

Applicant notes with appreciation the acknowledgment of the claim for foreign priority and the indication that all of the certified copies of the priority documents have been received.

In response to the Examiner's statement that a marked-up version of the substitute specification and an English translation of the international application were not received, Applicant submits herewith a copy of the previously-filed English translation of the international application, as well a copy of the previously-filed, marked-up version of the substitute specification .

In response to the Examiner's objection to the specification, appropriate changes have been made, including amendments to the Abstract and page 3 of the specification.

In response to the Examiner's objection to the drawing, Applicant has made appropriate corrections to the drawings, by designating Figure 1 with the legend "Prior Art." A replacement drawing sheet showing the change is included.

The Examiner objected to claim 10 because of the phrase "to thereto" on line 8. In response, this phrase has been corrected to be "thereto."

II. Rejection of Claims 10-18 Under 35 U.S.C. § 112, first paragraph

Claims 10-18 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. In particular, the Examiner contends that the following claimed features are contradicted by the disclosure in the Specification: a) in claim 10, "the motor vehicle electric supply voltage is applied directly as a charging voltage to the reserve storage energy accumulator and is applied as an input direct voltage to the step-down regulator"; b) in claim 11, "the reserve voltage is applied directly as input direct voltage to the at least one step-down regulator in an emergency"; c) in claim 14, "a plurality of step-down regulators to

which the motor vehicle electric system supply voltage is applied as an input direct voltage"; and d) in claim 15, "the reserve voltage is applied directly as an input direct voltage to the plurality of step-down regulators." In support of the rejection, the Examiner contends that the specification and drawings "clearly show that the supply voltage is not applied directly to the reserve storage energy accumulator or to the step-down regulator(s), but rather is applied to both the reserve storage energy accumulator and the step-down regulator(s) via a non-reversible diode (1) (see page 4, lines 12-13 and 25-27; page 5, lines 24-26; and Figures 2 and 3)."

In response to the Examiner rejections, Applicant has amended independent claim 10 recite that "in regular operation the motor vehicle electric supply voltage is applied directly via a diode as a charging voltage to the reserve storage energy accumulator and is applied via a diode as an input direct voltage to the step-down regulator, and wherein the reserve voltage is applied directly as input direct voltage to the at least one step-down regulator in an emergency." Dependent claim 14, which depends on claim 10 and encompasses a plurality of step-down regulators, similarly recites that "vehicle electric system supply voltage is applied via a diode as an input direct voltage during regular operation." Dependent claim 15, which directly depends on claim 14, recites that "the reserve voltage is applied directly as an input direct voltage to the plurality of step-down regulators in an emergency." As can be clearly seen in Fig. 2, when the reserve voltage is being discharged from the capacitor 3 to the step-down regulators 7, 8 and 9 in an emergency, **the discharge path does not include any intervening element.** Accordingly, the claimed features relating to the application of the reserve voltage in an emergency are fully supported by the specification.

Furthermore, claims 12-13 and 16-17 are directed to the embodiment shown in Fig. 3, and these claims clearly recite the relationships among the capacitor 3, the upstream step-down regulator 11, and the other step-down regulators 7, 8 and 9, when the reserve voltage is being discharged from the capacitor 3 in an emergency.

For the foregoing reasons, pending claims 10 and 12-18 are in compliance with 35 U.S.C. § 112, first paragraph, and Applicant requests withdrawal of the rejection.

III. Rejection of Claims 10-18 Under 35 U.S.C. § 112, second paragraph

Claims 10-18 are rejected under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission

amounting to a gap between the necessary structural connections. In particular, the Examiner contends that the omitted structural cooperative relationships include “the motor vehicle electric system supply voltage being directly connected to both the reserve energy accumulator and the step-down regulator(s).” Applicant notes that the Examiner’s stated basis of the § 112, second paragraph, rejection is the same as the basis of the § 112, first paragraph, rejection, and Applicant notes that the amendments and the explanations provided above in connection with the § 112, first paragraph, rejection similarly overcomes the § 112, second paragraph, rejection.

For the foregoing reasons, pending claims 10 and 12-18 are in compliance with 35 U.S.C. § 112, second paragraph, and Applicant requests withdrawal of the rejection..

IV. Rejection of Claims 10, 11, 14, 15 and 18 Under 35 U.S.C. §103(a)

Claims 10, 11, 14, 15 and 18 are rejected under 35 U.S.C. §103(a) as being unpatentable over the U.S. Patent No. 6,512,308 ("Boezen") in view of U.S. Patent Application Publication No. 2003/0145256 ("Jehlicka"). Claim 11 has been canceled. Applicant respectfully submits that the rejection of pending claims 10, 14, 15 and 18 should be withdrawn for at least the following reasons:

In rejecting a claim under 35 U.S.C. §103(a), the Examiner bears the initial burden of presenting a prima facie case of obviousness. In re Rijckaert, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). To establish prima facie obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must be found in the prior art and not based on the application disclosure. Second, there must be a reasonable expectation of success. In re Merck & Co., Inc., 800 F.2d 1091 (Fed. Cir. 1986). Third, the prior art references must teach or suggest all of the claimed limitations. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974).

Amended claim 10 recites:

10. (Currently Amended) A circuit arrangement to which a motor vehicle electric system supply voltage from a high-voltage, multi-voltage vehicle electric system is applied and for briefly maintaining at least one internal normal d.c. voltage for electronic

circuits in the event of failure of the motor vehicle electric system supply voltage, comprising:

a reserve energy accumulator to which a charging voltage higher than the at least one internal normal d.c. voltage is applied during regular operation and which, in the event of failure of the motor vehicle electric system supply voltage, delivers a reserve voltage with which operation of at least one of the electronic circuits can be maintained for a period of time; and

at least one step-down regulator that steps down an input direct voltage applied to thereto to the at least one internal normal d.c. voltage, wherein in regular operation the motor vehicle electric supply voltage is applied directly via a diode as a charging voltage to the reserve storage energy accumulator and is applied via a diode as an input direct voltage to the step-down regulator, and wherein the reserve voltage is applied directly as input direct voltage to the at least one step-down regulator in an emergency.

In accordance with the Applicant's claimed invention, in a multi-voltage vehicle electrical supply system designed as a high voltage vehicle electrical supply system, e.g., a dual voltage vehicle electrical supply system, starting from the higher voltage and using one or more step-down regulators, a voltage that corresponds to the normal vehicle electrical system voltage is generated. In this context, no step-up transformer is required, since the vehicle electrical system supply voltage is already a high voltage, e.g., 42 Volt, which high voltage is supplied directly via a diode to the reserve energy accumulator and to one or more step-down regulators.

Boezen discloses a fault-tolerant air bag system, in connection with which the associated voltage supply system is secured for individual components of the air bag and its control, with the aid of capacitors. Boezen clearly indicates that, for the voltage supply, two separate capacitors 14 and 34 are provided, which may be connected to each other via switches 36, 38, and both capacitors are supplied via a voltage transformer 16 with a voltage of 30 V that is higher than the battery voltage (12 V). Under specifiable conditions, e.g., a crash, the connection between the two capacitors is opened, in order to ensure that safety-relevant electrical consumers, e.g., a microprocessor 6, can still be supplied with energy for a while longer. In this context, energy supply to the microprocessor 6 always takes place, that is, in normal operation and during a crash, from capacitor 14 via a step-down regulator 20, at whose input there is always present the higher voltage of 30 V. Accordingly, the Boezen system requires a step-up transformer 16 for the overall operation (since battery voltage amounts to 12 V), whereas Applicant's claimed invention dispenses with the need for a step-up transformer by providing a

supply voltage of 42 V, and consequently the supply voltage may be applied directly to the reserve energy accumulator (or to the step-down regulator) without an intervening step-up transformer.

Jehlicka discloses a device for fault detection in a multi-voltage vehicle electrical supply system, e.g., a dual-voltage vehicle electrical supply system having two energy accumulators that are connected to each other via a DC/DC converter. In this context, a plausibility test is performed, i.e., the output signals of signal processing means having threshold values are compared, and, in the case of an implausible deviation from the expected comparison results, a fault is detected. While the high battery voltage of energy accumulator 25 is supplied directly to the DC/DC converter 30, but not to the second energy accumulator; instead, the already stepped down voltage is supplied to second energy accumulator 10. Thus, while Jehlicka shows a dual-voltage vehicle electrical system, Jehlicka does not provide any suggestion that one should directly feed the charging voltage to a reserve energy accumulator from the high battery voltage.

In view of the above-discussed disclosures of Boezen and Jehlicka, it is clear that the overall teachings of Boezen and Jehlicka do not set teach or suggest the features of amended claim 10, i.e., a reserve energy accumulator is at a charging voltage in regular operation, which charging voltage is greater than an internal operating voltage, and that, in the case of a fault, the operating voltage is generated from this reserve energy accumulator with the aid of a step-down regulator.

For at least the foregoing reasons, claim 10 and its dependent claims 14, 15 and 18 are allowable over the combination of Boezen and Jehlicka.


Applicant notes that claims 12, 13 and 16-17 were subject to only the rejections under 35 U.S.C. § 112, which rejections have been overcome. Accordingly, claims 12, 13 and 16-17 are in allowable condition.

Conclusion

In light of the foregoing, Applicant respectfully submits that all of the pending claims 10 and 12-18 are in condition for allowance. Prompt reconsideration and allowance of the present application are therefore respectfully requested.

Respectfully submitted,

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